

Implementation of MedDRA upgrade in SDTM: a SAS- based approach

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AGENDA

- ❑ Introduction
- ❑ Motivation
- ❑ SAS-based approach
- ❑ Step1: Prepare
- ❑ Step2: Integrate
- ❑ Conclusion



#Data #DataDriven
#DataStrategy #DataIntegration
#DataViz #DataStandards
#DataScience #Datagovernance
#HealthCare #DataAnalysis
#ClinicalTrials
#ArtificialIntelligence
#AdvancedAnalytics
#MachineLearning #Digital
#Chatbot #Biometrics #CRO
#ClinicalData
#LifeSciencesExperts
#Whodrug #MedDRA
#Pharmacovigilance
#ClinicalResearchLifeCycle
#MedicalWriting
#MedicalInformation
#MedicalReview #SDTM
#ADaM #CDISC #Innovation
#RegulatorySubmissions
#Protocol #Coding

INTRODUCTION



MedDRA, Medical Dictionary for Regulatory Activities, is a global medical terminology used in pharmacovigilance and regulation of medical products

Standardization

Pharmacovigilance

Regulatory
Reporting

Research and
Clinical Trials

Public Health
Monitoring

Motivation

MedDRA and SDTM

**Why do we need to update
SDTM using MedDRA?**

MOTIVATION

- New MedDRA release, need to assess impact of dictionary change and recode terms with new version.
- Pooling studies that use different versions, with the sponsor aiming to align them.

MOTIVATION

Problem

MHTERM	MHLLT ▲	MHLLTCD	MHDECOD	MHPTCD
recurrent common cold	Common cold	10010106	Viral upper respiratory tract infection	10047482
Metrorrhagia	Metrorrhagia	10027514	Metrorrhagia	10027514
Metrrhorrhagia	Metrorrhagia	10027514	Metrorrhagia	10027514
flight anxiety	Phobia of flying	10034914	Phobia of flying	10034914
left shoulder pain	Shoulder pain	10040617	Musculoskeletal pain	10028391
pain left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391
pain of left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391
increased thyroid function	Thyroid function abnormal	10043726	Thyroid function test abnormal	10043730

MOTIVATION

Goal

Upgrade the values of coding variables such as MHDECOD, MHPTCD. from MedDRA in SDTM datasets (AE, MH,PR).

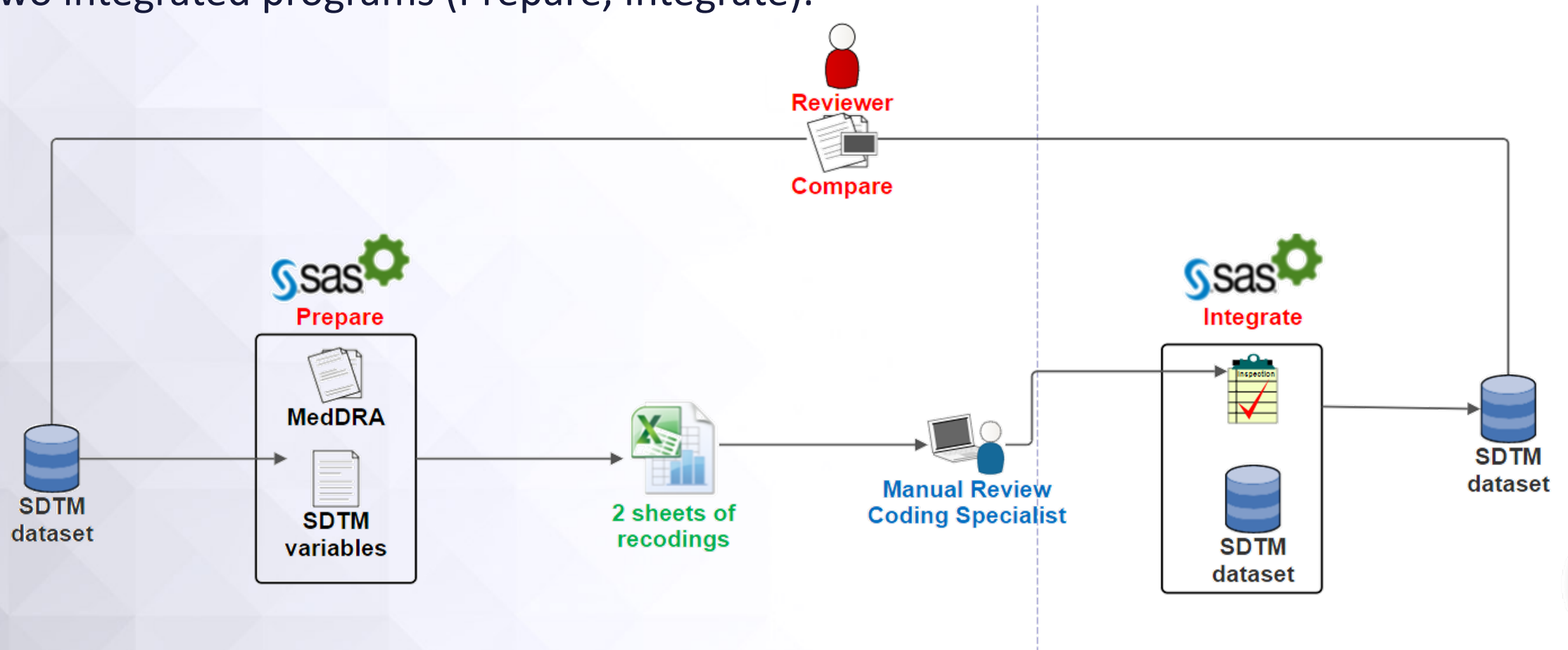
SAS-Based Approach

Upgrade SDTM using MedDRA

Prepare, integrate

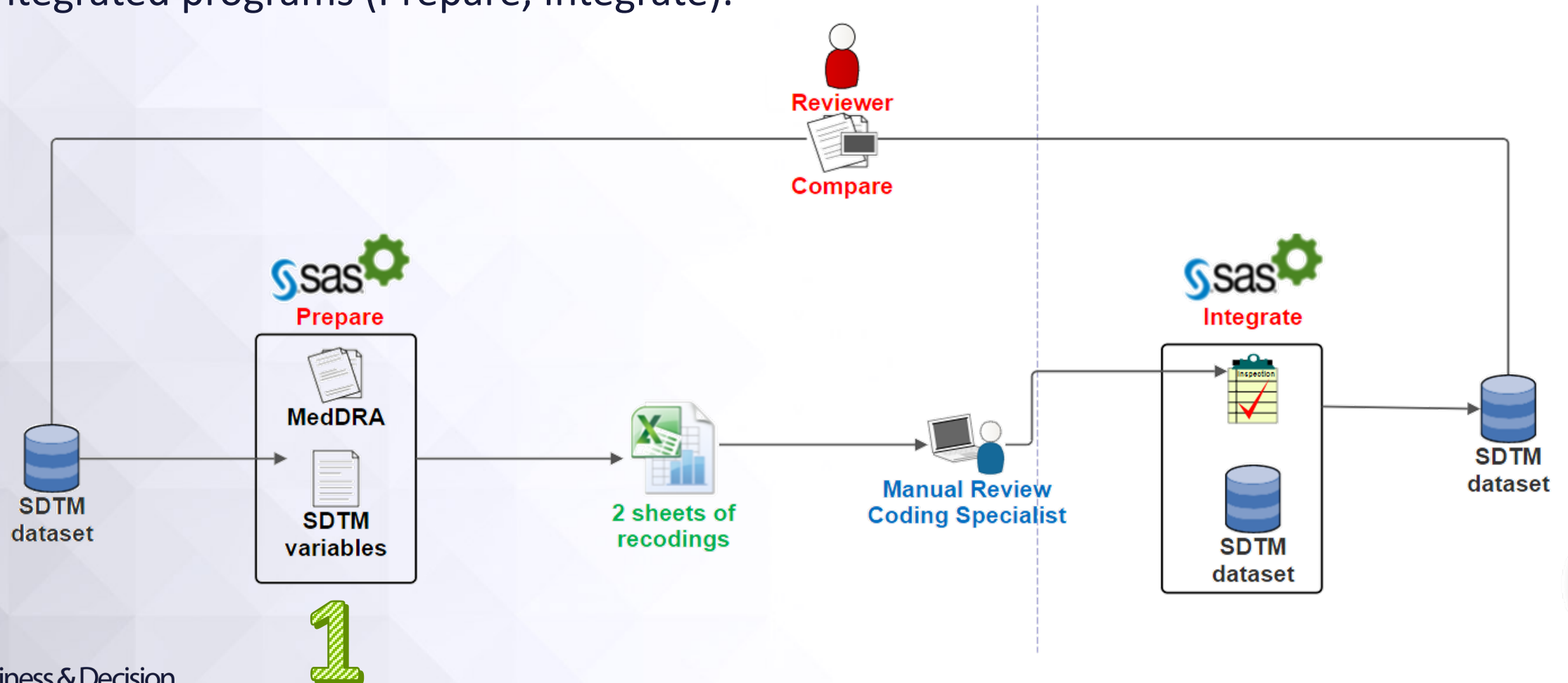
SAS-BASED APPROACH

- We developed a SAS-based approach to upgrade the AE, MH, and PR domains by using two integrated programs (Prepare, Integrate).



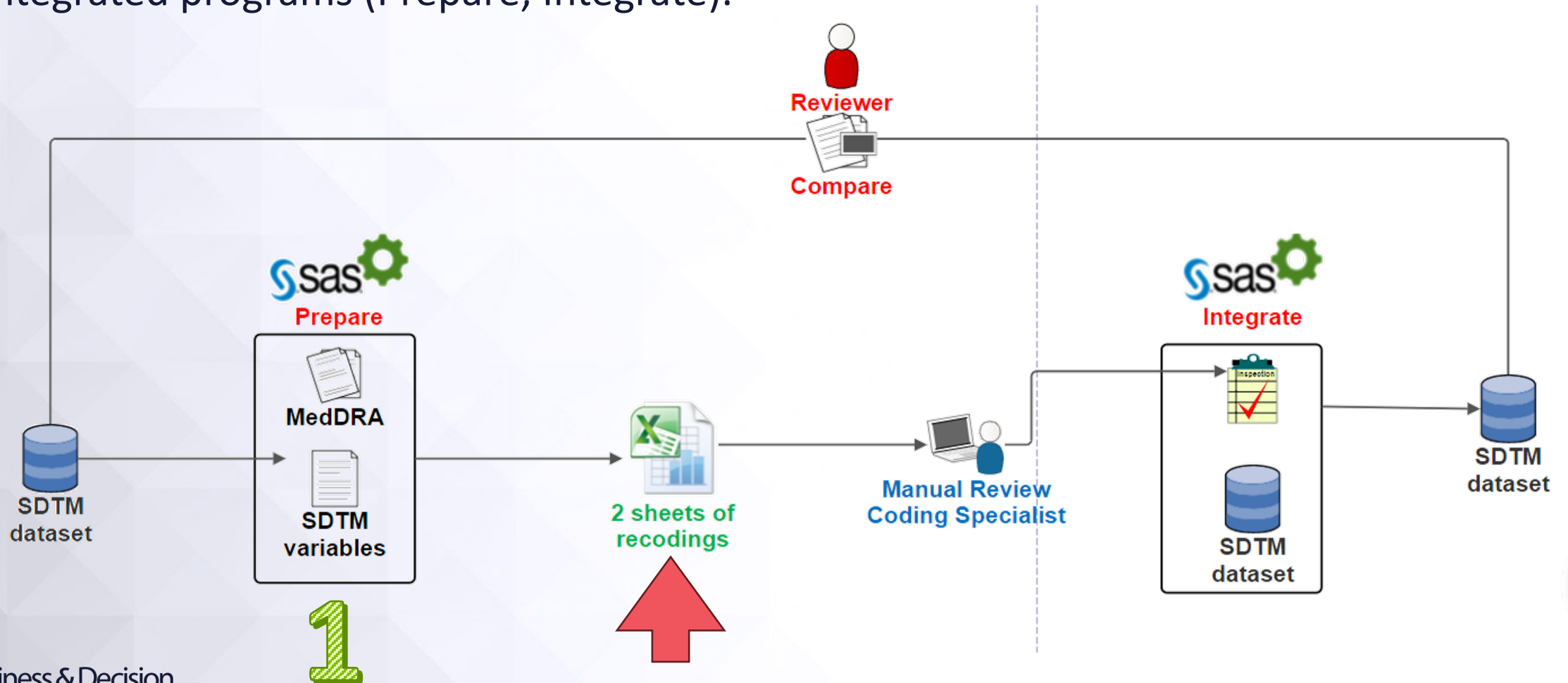
SAS-BASED APPROACH

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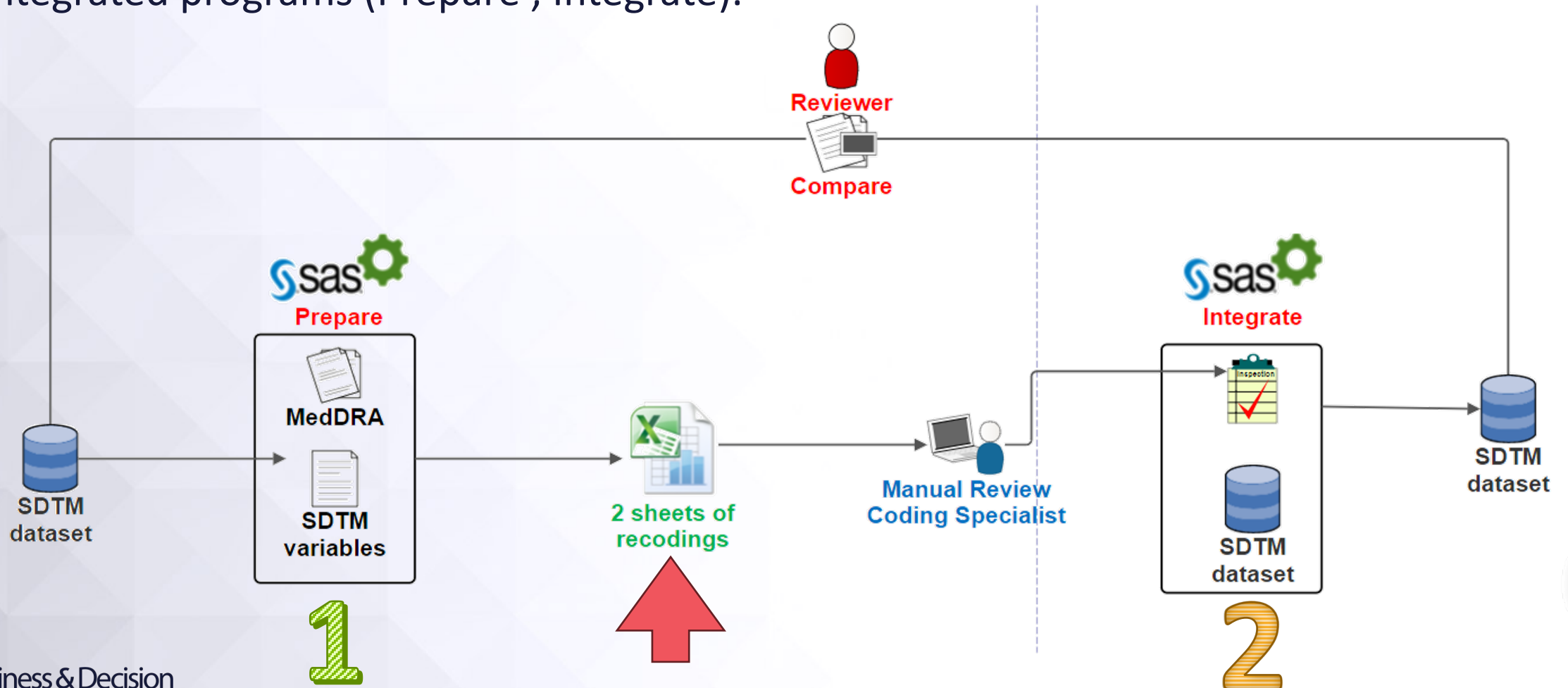
SAS-BASED APPROACH

- We develop a SAS-based approach to upgrade the AE, MH, and PR domains by using two integrated programs (Prepare, Integrate).



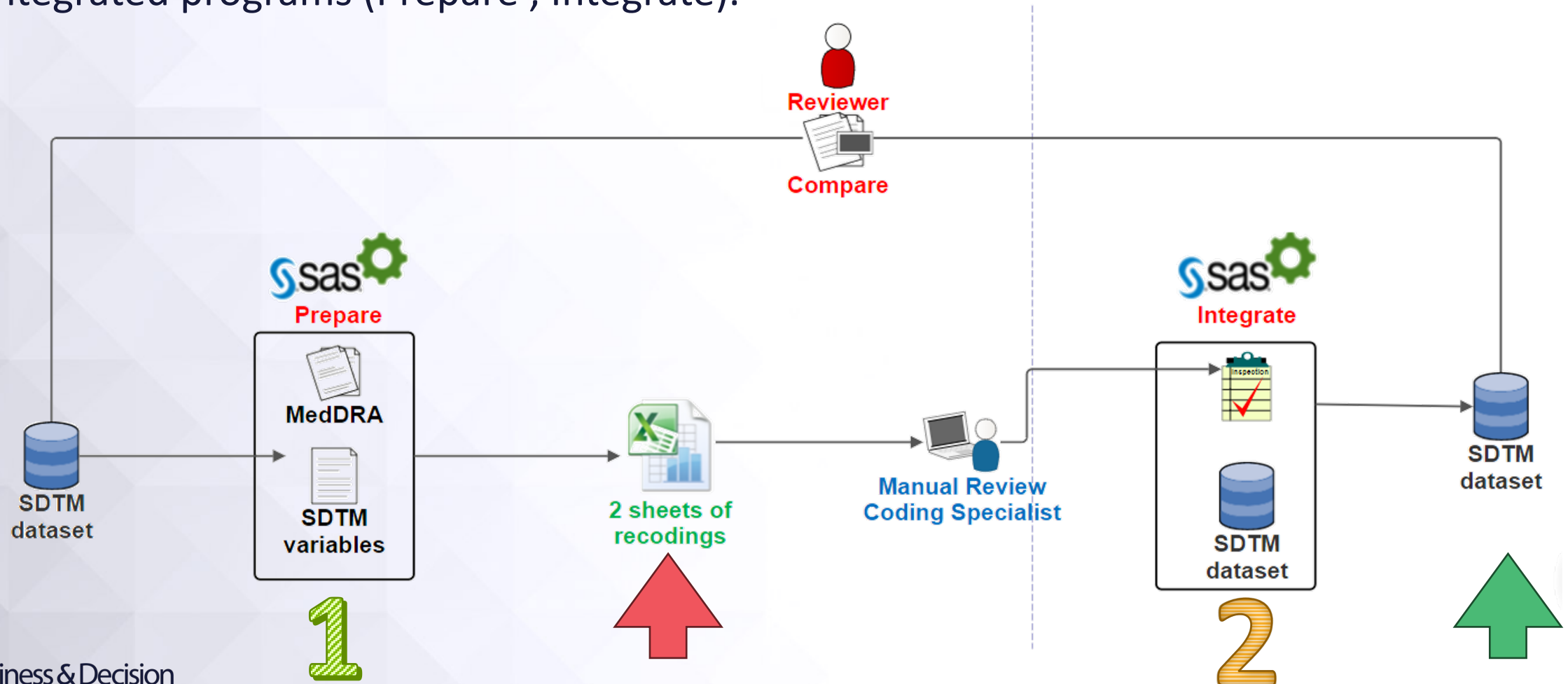
SAS-BASED APPROACH

- We develop a SAS-based approach to upgrade the AE, MH, and PR domains by using two integrated programs (Prepare , Integrate).



SAS-BASED APPROACH

- We develop a SAS-based approach to upgrade the AE, MH, and PR domains by using two integrated programs (Prepare , Integrate).



Prepare

Excel sheets

How did we tackle this?

STEP1: PREPARE, HOW?

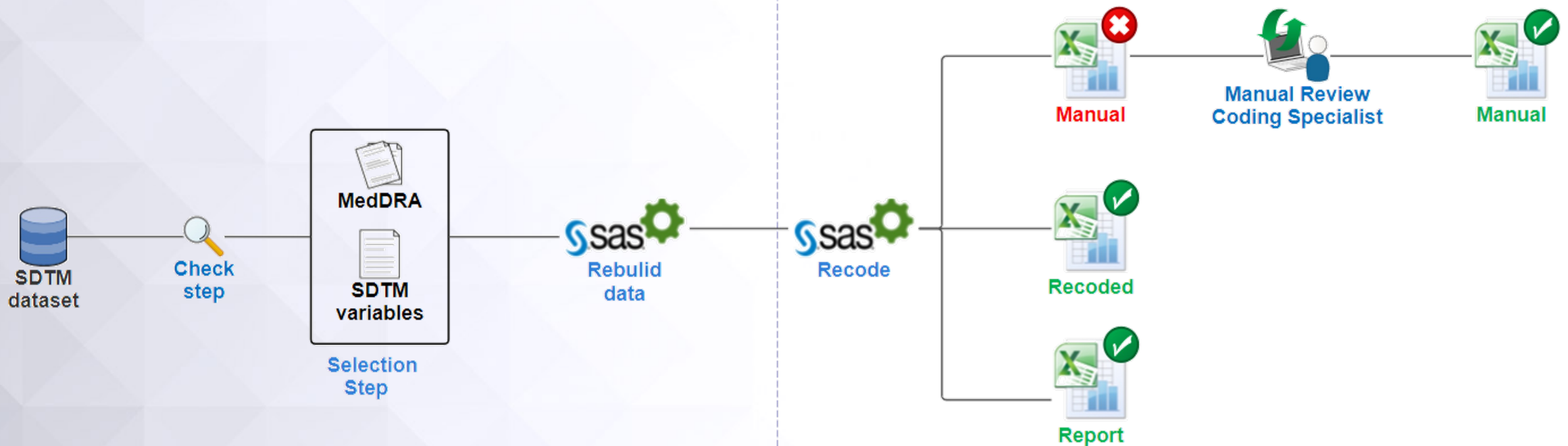
Parameters

- Project ID
- Study ID
- Domain Name
- MedDRA Version



Inputs

- SDTM dataset
- MedDRA Dictionary



STEP1: PREPARE, HOW?

Parameters

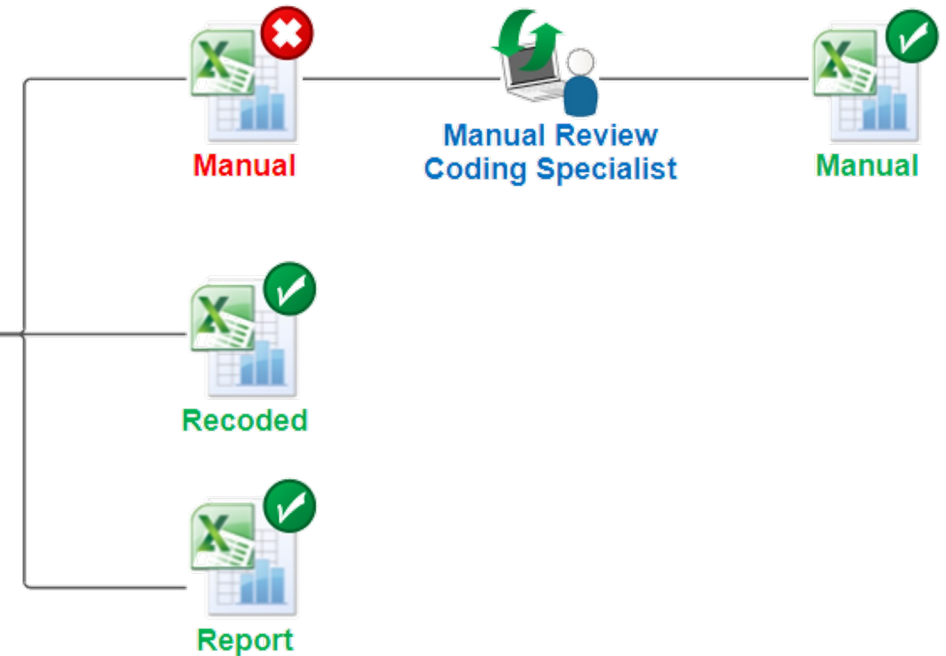
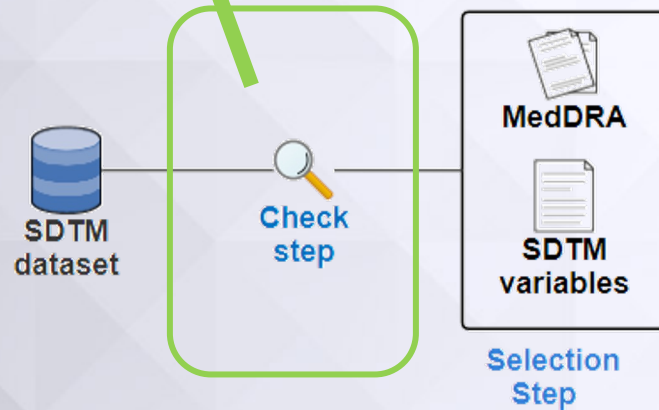
- Project ID
- Study ID
- Domain Name
- MedDRA Version



Inputs

- SDTM dataset
- MedDRA Dictionary

```
/*Please, specify the following:*/  
%let REP_ID=%nrquote( ); *---Project ID---;  
%let StudyID=%nrquote( ); *---StudyID---;  
%let Type=%nrquote(DS); *---Type : DS/DM ?---;  
%let domainName=%upcase(pr); *---Domain Name---;  
%let version = 25.0; *---Dictionary Version---;
```



STEP1: PREPARE, HOW?

Parameters

- Project ID
- Study ID
- Domain Name
- MedDRA Version



Inputs

- SDTM dataset
- MedDRA Dictionary

SDTM
dataset

Check
step

MedDRA
SDTM
variables

Selection
Step

sas
Rebuild
data

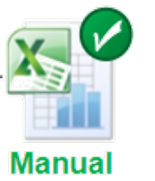
sas
Recode



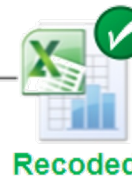
Manual



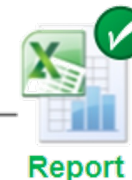
Manual Review
Coding Specialist



Manual



Recoded



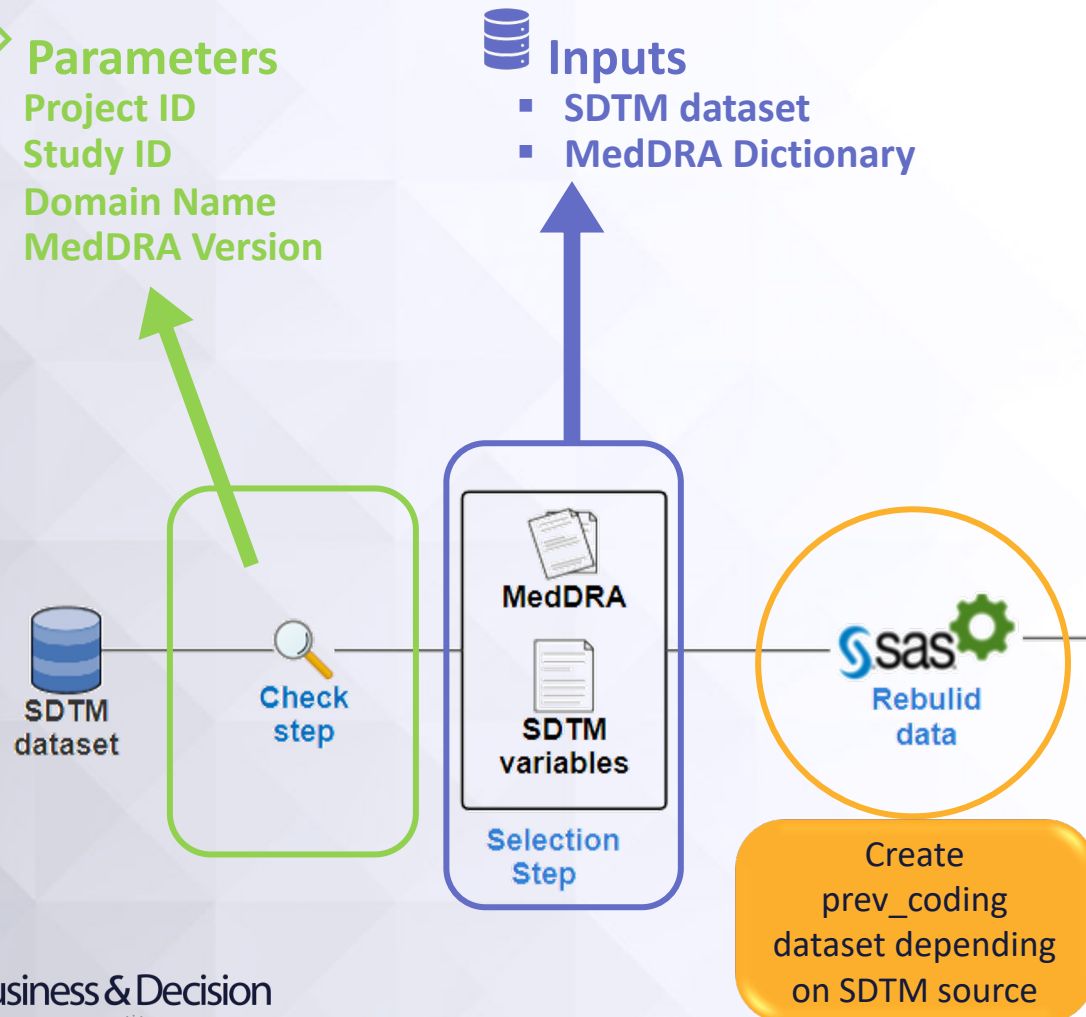
Report

```
/*Output folder for excel files and input folder for MedDRA version*/  
%let meddra_src=\\fileserver\CRO\General Documentation\8_Reference Materials\Dictionary\MedDRA;  
%let folder=\\fileserver\home\&sysuserid.\&Type._DVL_BEL-LSP_&REP_ID.\&mapping_path.\&StudyID.\Recoding;  
libname folder "&folder."; libname folder clear;  
libname folder "&folder.\logs"; libname folder clear;  
libname MEDDRA "&meddra_src.\SASds\&version." access=readonly;
```

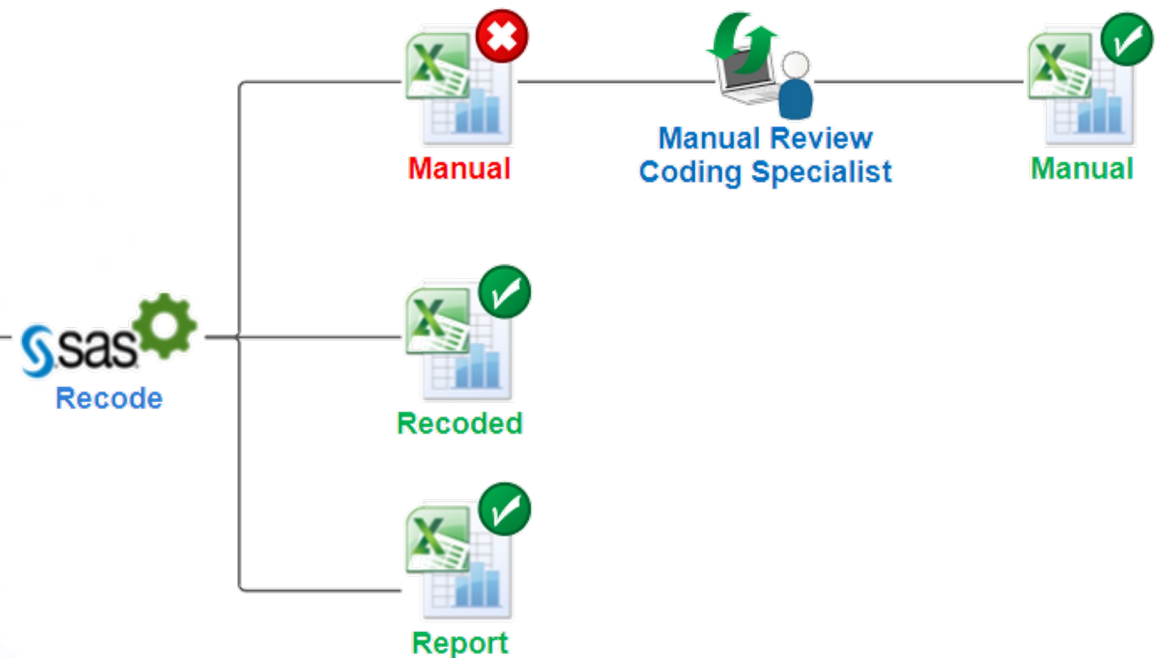
STEP1: PREPARE, HOW?

Parameters

- Project ID
- Study ID
- Domain Name
- MedDRA Version



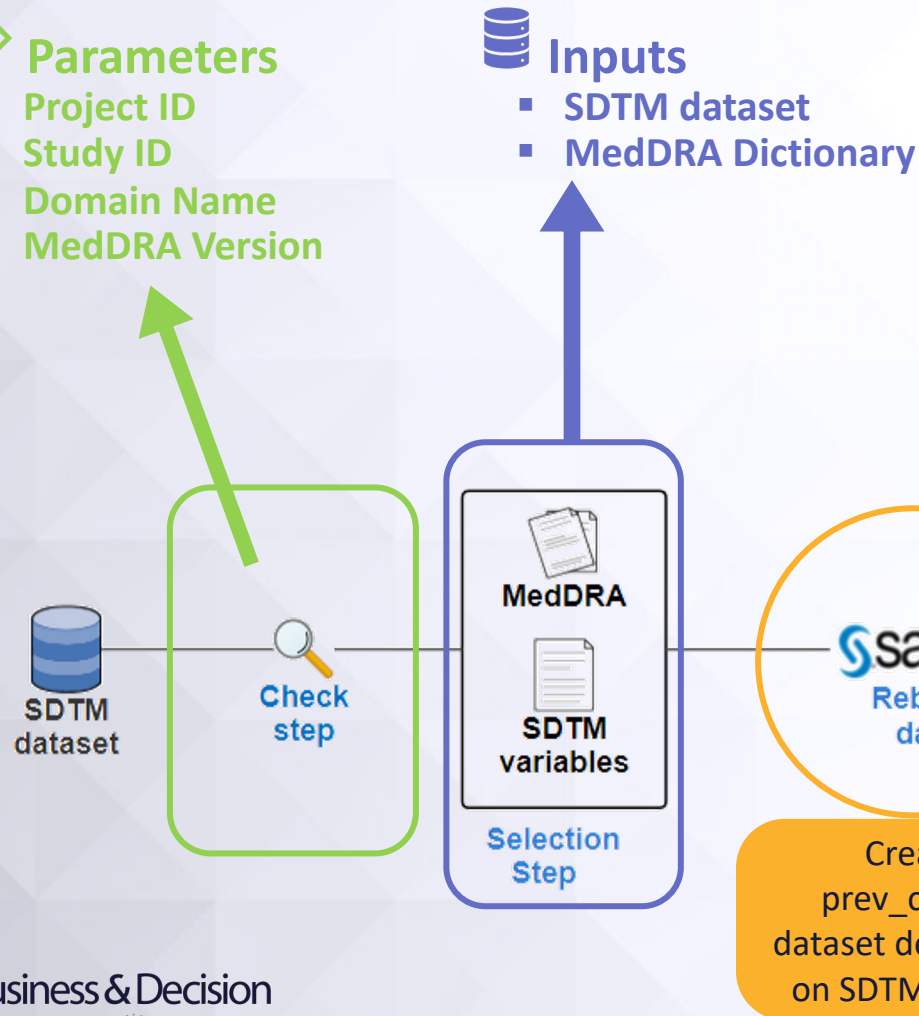
```
%macro rebuildData(data=);  
  %let nvar=0;  
  %if "&data." = "PR" %then %do;  
    %preparePR;  
    proc sql noprint;  
      select count(*) into:nvar  
        from dictionary.columns  
        where strip(libname)="WORK"  
        and strip(memname)="PR"  
        and strip(name) in ("PRTERM","PRLLT","PRLLTCD","PRDECOD","PRPTCD"  
      %put Variables in PR for Coding: &nvar. / 11;  
      %PUT NOTE: Domain is &data.;  
    %PUT NOTE: NVAR IS &NVAR.;  
  %end;  
%endmacro;
```



STEP1: PREPARE, HOW?

Parameters

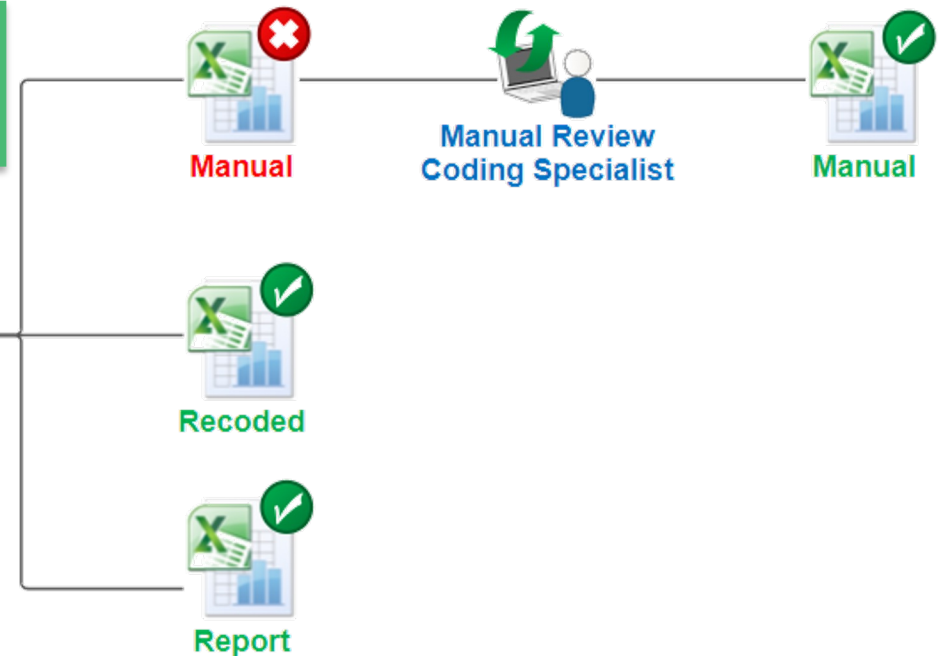
- Project ID
- Study ID
- Domain Name
- MedDRA Version



```
/*Find the non-matchable data in the new dictionary*/
%macro recode(data=);
  %put NOTE: Recoding &data. to latest MedDra version available;
  %LET data=&domainName.;
  %rebuildData(data=&data.);

  DATA PREV_CODING;
    SET PREV_CODING;
    SOCCD=BDSYCD;
    SOC=BODSYS;
  RUN;
```

Find the non-matchable data in the new dictionary



STEP1: PREPARE, HOW?

Parameters

- Project ID
- Study ID
- Domain Name
- MedDRA Version



Inputs

- SDTM dataset
- MedDRA Dictionary

SDTM
dataset

Check
step

MedDRA
SDTM
variables

Selection
Step

sas
Rebulid
data

Create
prev_coding
dataset depending
on SDTM source

Find the non-
matchable data in
the new dictionary

sas
Recode



Outputs

- Excel file
 - Manual
 - Recoded
 - Report

Manual

Manual Review
Coding Specialist

Manual

Recoded

Report

STEP1: PREPARE, RESULTS

VERBATIM	LLT	LLTCD	PT	PTCD	HLT	HLTCD	LLT Name	LLT Code	PT Name	PT Code	HLT Name	HLT Code
Paraovarial cyst on	Parovarian	10052456	Parovarian cyst	10052456	Ovarian and fallopian tube cysts and neoplasms	10033121	Paraovarian cyst	10052456	Adnexa uteri cyst	10050203	Pelvis and broad ligament disorders NEC	10013344
MH_MANUAL MH_RECODED Report +												

VERBATIM	LLT	LLTCD	PT	PTCD	LLT Name	LLT Code	PT Name	PT Code
recurrent common cold	Common cold	10010106	Viral upper respiratory tract infection	10047482	Common cold	10010106	Nasopharyngitis	10028810
Menorrhagia	Menorrhagia	10027313	Menorrhagia	10027313	Menorrhagia	10027313	Heavy menstrual bleeding	10085423
Metrorrhagia	Metrorrhagia	10027514	Metrorrhagia	10027514	Metrorrhagia	10027514	Intermenstrual bleeding	10022559
flight anxiety	Phobia of flying	10034914	Phobia of flying	10034914	Phobia of flying	10034914	Aerophobia	10080300
left shoulder pain	Shoulder pain	10040617	Musculoskeletal pain	10028391	Shoulder pain	10040617	Arthralgia	10003239
pain left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Shoulder pain	10040617	Arthralgia	10003239
pain of left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Shoulder pain	10040617	Arthralgia	10003239
increased thyroid function	Thyroid function abnormal	10043726	Thyroid function test abnormal	10043730	Thyroid function abnormal	10043726	Thyroid disorder	10043709
MH_MANUAL MH_RECODED Report +								

STEP1: PREPARE, RESULTS

VERBATIM	LLT	LLTCD	PT	PTCD	HLT	HLTCD	LLT Name	LLT Code	PT Name	PT Code	HLT Name	HLT Code
Paraovarial cyst on	Parovarian	10052456	Parovarian cyst	10052456	Ovarian and fallopian tube cysts and neoplasms	10033121	Paraovarian cyst	10052456	Adnexa uteri cyst	10050203	Pelvis and broad ligament disorders NEC	10013344
MH_MANUAL MH_RECODED Report +												

Before

VERBATIM	LLT	LLTCD	PT	PTCD	LLT Name	LLT Code	PT Name	PT Code
recurrent common cold	Common cold	10010106	Viral upper respiratory tract infection	10047482	Common cold	10010106	Nasopharyngitis	10028810
Menorrhagia	Menorrhagia	10027313	Menorrhagia	10027313	Menorrhagia	10027313	Heavy menstrual bleeding	10085423
Metrorrhagia	Metrorrhagia	10027514	Metrorrhagia	10027514	Metrorrhagia	10027514	Intermenstrual bleeding	10022559
flight anxiety	Phobia of flying	10034914	Phobia of flying	10034914	Phobia of flying	10034914	Aerophobia	10080300
left shoulder pain	Shoulder pain	10040617	Musculoskeletal pain	10028391	Shoulder pain	10040617	Arthralgia	10003239
pain left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Shoulder pain	10040617	Arthralgia	10003239
pain of left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Shoulder pain	10040617	Arthralgia	10003239
increased thyroid function	Thyroid function abnormal	10043726	Thyroid function test abnormal	10043730	Thyroid function abnormal	10043726	Thyroid disorder	10043709
MH_MANUAL MH_RECODED Report +								

Before

STEP1: PREPARE, RESULTS

VERBATIM	LLT	LLTCD	PT	PTCD	HLT	HLTCD	LLT Name	LLT Code	PT Name	PT Code	HLT Name	HLT Code
Paraovarial cyst on	Parovarian	10052456	Parovarian cyst	10052456	Ovarian and fallopian tube cysts and neoplasms	10033121	Paraovarian cyst	10052456	Adnexa uteri cyst	10050203	Pelvis and broad ligament disorders NEC	10013344
MH_MANUAL MH_RECODED Report +												

Before

After

VERBATIM	LLT	LLTCD	PT	PTCD	LLT Name	LLT Code	PT Name	PT Code
recurrent common cold	Common cold	10010106	Viral upper respiratory tract infection	10047482	Common cold	10010106	Nasopharyngitis	10028810
Menorrhagia	Menorrhagia	10027313	Menorrhagia	10027313	Menorrhagia	10027313	Heavy menstrual bleeding	10085423
Metrorrhagia	Metrorrhagia	10027514	Metrorrhagia	10027514	Metrorrhagia	10027514	Intermenstrual bleeding	10022559
flight anxiety	Phobia of flying	10034914	Phobia of flying	10034914	Phobia of flying	10034914	Aerophobia	10080300
left shoulder pain	Shoulder pain	10040617	Musculoskeletal pain	10028391	Shoulder pain	10040617	Arthralgia	10003239
pain left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Shoulder pain	10040617	Arthralgia	10003239
pain of left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Shoulder pain	10040617	Arthralgia	10003239
increased thyroid function	Thyroid function abnormal	10043726	Thyroid function test abnormal	10043730	Thyroid function abnormal	10043726	Thyroid disorder	10043709
MH_MANUAL MH_RECODED Report +								

Before

After

Integrate

SDTM & Excel sheets

How will the combination be done?

STEP2: INTEGRATE, HOW?

Parameters

- Project ID
- Study ID
- Domain name
- Excel file
- SUPP_--



Inputs

- SDTM dataset
- Excel file
 - Manual
 - Recoded



STEP2: INTEGRATE, HOW?

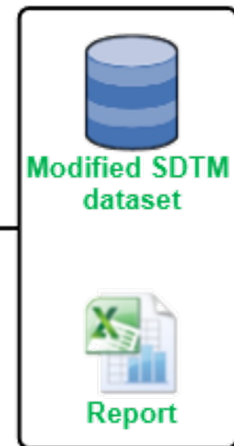
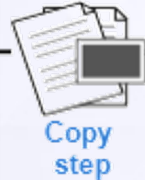
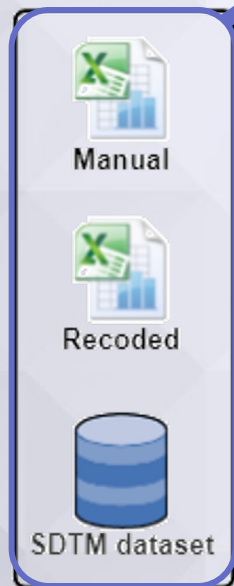
Parameters

- Project ID
- Study ID
- Domain name
- Excel file
- SUPP_--



Inputs

- SDTM dataset
- Excel file
 - Manual
 - Recoded



Check the parameters and if the excel file exist/open

```
*---Check if the excel file exist or not and if exist is it open or not---;  
%macro excelExistOpen (filename=);  
/*Check if the excel file exists or not */  
%if not %sysfunc(fileexist(&filename)) %then %do;  
    %put ERROR: The file &filename does not exist.;  
    %abort cancel;  
%end;  
/*Check if the excel file is open or not*/  
%if %sysfunc(fileexist(&filename)) %then %do;  
    %put NOTE: The file &filename exists.;  
    PROC IMPORT OUT= WORK.INSTRUCT  
        DATAFILE= "&filename"  
        DBMS=EXCEL REPLACE;  
    RUN;
```

STEP2: INTEGRATE, HOW?

Parameters

- Project ID
- Study ID
- Domain name
- Excel file
- SUPP_XX



Inputs

- SDTM dataset
- Excel file
 - Manual
 - Recoded

```
%macro DATA_RECOD(REP_ID=,STUDYID=,data=,file=,paramdb=N,review=N);  
  %local REP_ID STUDYID FILE param sdm ER;  
  %let REP_ID=&REP_ID;  
  %let STUDYID=&STUDYID.;  
  
  %let DATA=&domainName.;  
  %let file=&file.%;%put &file.;  
  
  %let ER=0;  
  /*SDTM: default path if "blinded"; otherwise take parameter database*/  
  %let SDTM=&dSDTM.;  
  %let param=\\fileserver\CRO\&Type.\BEL-LSP_&REP_ID.\Data\SDTM_Checks\Parameter Database;
```



STEP2: INTEGRATE, HOW?

Parameters

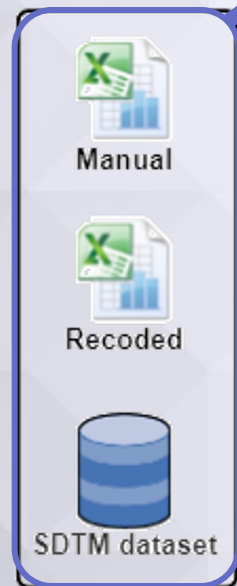
- Project ID
- Study ID
- Domain name
- Excel file
- SUPP_XX



Inputs

- SDTM dataset
- Excel file
 - Manual
 - Recorded

```
%macro merge(data=,review=N);  
  proc sort data=sdtm.&domainName. out=&domainName.;  
    by USUBJID &domainName.seq;  
  run;  
  
  %if %upcase("&domainName.") ^= "CM" %then %do;  
    proc sql noprint;  
      create table temp_&domainName.(drop=ROWID VERBATIM) as  
        select a.*,b.* from &domainName. a left join &domainName._MED b  
          on cats(compress(a.USUBJID,"-"),put(a.&domainName.SEQ,best.))=strip(b.ROWID)  
          and  
          %if %upcase("&domainName.")="PR" %then %do;  
            strip(a.&domainName.TRT)  
          %end;  
          %else %do;  
            strip(a.&domainName.TERM)  
          %end;  
          =strip(VERBATIM)  
    ;  
  end;  
end;
```



Check
step

Copy
step

Recode

Merge

Sort&Update

Modified SDTM
dataset

Report

Combine the
source SDTM
dataset with
the excel sheets

Check the
parameters and if
the excel file
exist/open

Prepare the
excel sheets to
the next step

STEP2: INTEGRATE, HOW?

Parameters

- Project ID
- Study ID
- Domain name
- Excel file
- SUPP_XX



Inputs

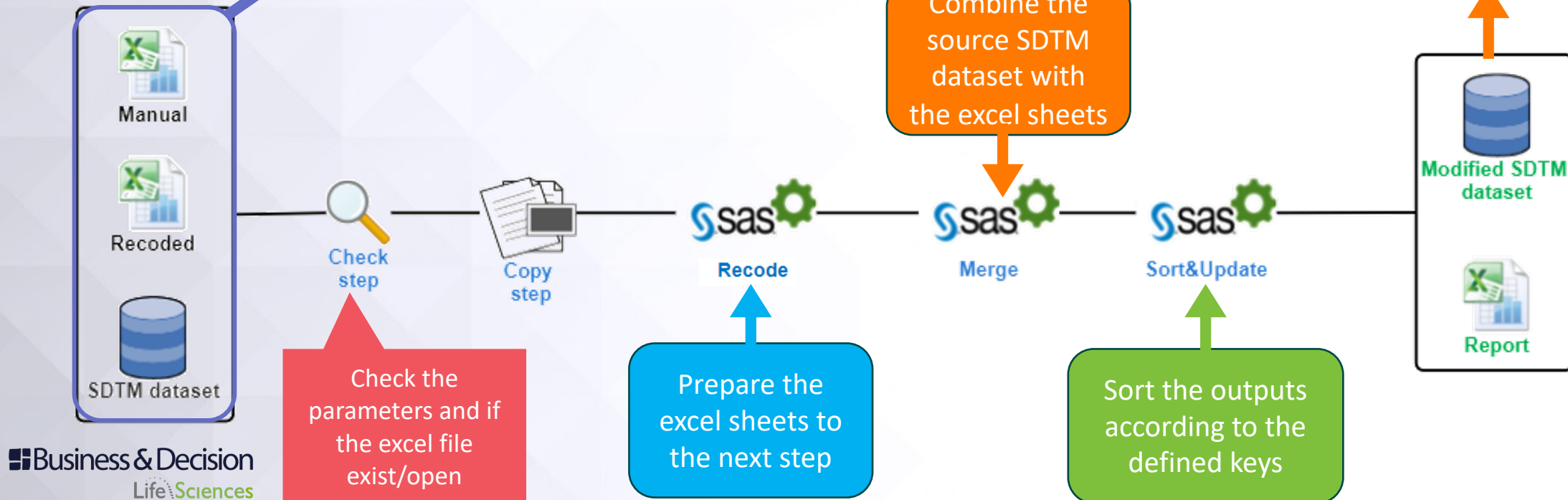
- SDTM dataset
- Excel file
 - Manual
 - Recoded

```
%macro SortByKey(data=);  
/* IMPORT ADAM TABLE LEVEL METADATA DOMAIN SHEET */  
filename refmap "&mapping." ENCODING='wlatin1';  
PROC IMPORT OUT= WORK.SDTM_TABLE_METADATA  
DATAFILE=refmap  
DBMS=&DBMS. REPLACE;  
/*SHEET="'B# SDTM table metadata$'";*/  
%sysfunc(prxchange(&prxchange_sheet, 1, A. SDTM table metadata));  
GETNAMES=YES;  
%unquote(&import_opts);  
RUN;
```



Outputs

- Modified SDTM dataset
- Excel file
 - Old SDTM dataset
 - Modified SDTM dataset
 - Changes



Prepare & Integrate

What results did we obtain?

RESULTS

Before

MHTERM	MHLLT ▲	MHLLTCD	MHDECOD	MHPTCD	MHHLT	MHHLTCD
recurrent common cold	Common cold	10010106	Viral upper respiratory tract infection	10047482	Viral infections NEC	10047465
Metrorrhagia	Metrorrhagia	10027514	Metrorrhagia	10027514	Menstruation and uterine bleeding NEC	10027335
Metrorrhagia	Metrorrhagia	10027514	Metrorrhagia	10027514	Menstruation and uterine bleeding NEC	10027335
flight anxiety	Phobia of flying	10034914	Phobia of flying	10034914	Fear symptoms and phobic disorders (incl social phobia)	10068299
left shoulder pain	Shoulder pain	10040617	Musculoskeletal pain	10028391	Musculoskeletal and connective tissue pain and discomfort	10068757
pain left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Musculoskeletal and connective tissue pain and discomfort	10068757
pain of left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Musculoskeletal and connective tissue pain and discomfort	10068757
increased thyroid function	Thyroid function abnormal	10043726	Thyroid function test abnormal	10043730	Thyroid analyses	10043692

After

MHTERM	MHLLT ▲	MHLLTCD	MHDECOD	MHPTCD	MHHLT	MHHLTCD
recurrent common cold	Common cold	10010106	Nasopharyngitis	10028810	Upper respiratory tract infections	10046309
Metrorrhagia	Metrorrhagia	10027514	Intermenstrual bleeding	10022559	Menstruation and uterine bleeding NEC	10027335
Metrorrhagia	Metrorrhagia	10027514	Intermenstrual bleeding	10022559	Menstruation and uterine bleeding NEC	10027335
flight anxiety	Phobia of flying	10034914	Aerophobia	10080300	Fear symptoms and phobic disorders (incl social phobia)	10068299
left shoulder pain	Shoulder pain	10040617	Arthralgia	10003239	Joint related signs and symptoms	10023226
pain left shoulder	Shoulder pain	10040617	Arthralgia	10003239	Joint related signs and symptoms	10023226
pain of left shoulder	Shoulder pain	10040617	Arthralgia	10003239	Joint related signs and symptoms	10023226
increased thyroid function	Thyroid function abnormal	10043726	Thyroid disorder	10043709	Thyroid disorders NEC	10043712

RESULTS

Before

MHTERM	MHLLT ▲	MHLLTCD	MHDECOD	MHPTCD	MHHLT	MHHLTCD
recurrent common cold	Common cold	10010106	Viral upper respiratory tract infection	10047482	Viral infections NEC	10047465
Metrorrhagia	Metrorrhagia	10027514	Metrorrhagia	10027514	Menstruation and uterine bleeding NEC	10027335
Metrorrhagia	Metrorrhagia	10027514	Metrorrhagia	10027514	Menstruation and uterine bleeding NEC	10027335
flight anxiety	Phobia of flying	10034914	Phobia of flying	10034914	Fear symptoms and phobic disorders (incl social phobia)	10068299
left shoulder pain	Shoulder pain	10040617	Musculoskeletal pain	10028391	Musculoskeletal and connective tissue pain and discomfort	10068757
pain left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Musculoskeletal and connective tissue pain and discomfort	10068757
pain of left shoulder	Shoulder pain	10040617	Musculoskeletal pain	10028391	Musculoskeletal and connective tissue pain and discomfort	10068757
increased thyroid function	Thyroid function abnormal	10043726	Thyroid function test abnormal	10043730	Thyroid analyses	10043692

After

MHTERM	MHLLT ▲	MHLLTCD	MHDECOD	MHPTCD	MHHLT	MHHLTCD
recurrent common cold	Common cold	10010106	Nasopharyngitis	10028810	Upper respiratory tract infections	10046309
Metrorrhagia	Metrorrhagia	10027514	Intermenstrual bleeding	10022559	Menstruation and uterine bleeding NEC	10027335
Metrorrhagia	Metrorrhagia	10027514	Intermenstrual bleeding	10022559	Menstruation and uterine bleeding NEC	10027335
flight anxiety	Phobia of flying	10034914	Aerophobia	10080300	Fear symptoms and phobic disorders (incl social phobia)	10068299
left shoulder pain	Shoulder pain	10040617	Arthralgia	10003239	Joint related signs and symptoms	10023226
pain left shoulder	Shoulder pain	10040617	Arthralgia	10003239	Joint related signs and symptoms	10023226
pain of left shoulder	Shoulder pain	10040617	Arthralgia	10003239	Joint related signs and symptoms	10023226
increased thyroid function	Thyroid function abnormal	10043726	Thyroid disorder	10043709	Thyroid disorders NEC	10043712

RESULTS

Report

LLT_CHG	LLTCD_CHG	PTCD_CHG	DECOD_CHG	HLT_CHG	HLTCD_CHG	HLGT_CHG	HLGTCD_CHG	SOC_CHG	SOCDD_CHG	BODSYS_CHG	BDSYCD_CHG
		Y	Y	Y	Y	Y	Y				
		Y	Y	Y	Y	Y	Y				
				Y	Y						
		Y	Y								
				Y	Y	Y	Y	Y	Y	Y	Y
				Y	Y						
						Y	Y				
						Y	Y				
		Y	Y	Y	Y	Y	Y				
		Y	Y	Y	Y						

Conclusion

Implementation of MedDRA upgrade in SDTM

What did we learn?

CONCLUSION

- Recoding variables in SDTM using MedDRA is a crucial step.
- The approach can handle the AE, MH, and PR domains.
- Prepare program can provide feedback for the coding specialist, especially with the excels sheets.
- Optimizing Integrate program is still worth doing to reduce the run-time.

CODE EXAMPLE

```
1 options SASAUTOS=("\\fileserver\home\&sysuserid.\&Type._DVL_BEL-LSP_&REP_ID.\Programs\MedDRA\Compare\Macros") mrecall=YES;
2 /* This to specify P: and W: structure if it's DS or DM */
3 %macro define_DS_DM;
4   options mprint;
5   /*Sanity check*/
6   %if "&REP_ID."="" or "&STUDYID."="" or "&Type."="" or "&domainName."="" %then %do;
7     %PUT ERROR: One or more of the parameters is missing: Please check down which parameter is missing;
8     %PUT - REP_ID = "&REP_ID.";
9     %PUT - STUDYID = "&STUDYID.";
10    %PUT - Type = "&Type.";
11    %PUT - domainName = "&domainName.";
12    %PUT ERROR: Aborting program;
13    %abort cancel;
14  %end;
15
16  %global mapping_path data ;
17  %if &type = DS %then %do ;
18    %let mapping_path=Mapping;
19    %let data=Data;
20  %end;
21  %else %if &type = DM %then %do ;
22    %let mapping_path=DM Data\Mapping;
23    %let data=SDTM Data;
24  %end;
25 %mend define_DS_DM;
```

CODE EXAMPLE

```
1 options SASAUTOS=("\\fileserver\home\&sysuserid.\&Type._DVL_BEL-LSP_&REP_ID.\Programs\MedDRA\Integrate\Macros") mrecall=YES;
2 %macro SortByKey(data=);
3   /* IMPORT ADAM TABLE LEVEL METADATA DOMAIN SHEET */
4   filename refmap "&mapping." ENCODING='wlatin1';
5   PROC IMPORT OUT= WORK.SDTM_TABLE_METADATA
6     DATAFILE=refmap
7     DBMS=&DBMS. REPLACE;
8     /*SHEET="'B# SDTM table metadata$'";*/
9     %sysfunc(prxchange(&prxchange_sheet, 1, A. SDTM table metadata));
10    GETNAMES=YES;
11    %unquote(&import_opts);
12  RUN;
13
14  DATA SDTM_TABLE_METADATA_SHEET (rename = (A1 = DATASET A2 = DESCRIPTION A3 = CLASS A4 = STRUCTURE A5 = PURPOSE A6 = KEYS A7 = XPORT));
15    SET SDTM_TABLE_METADATA(FIRSTOBS = 2 keep = A1 A2 A3 A4 A5 A6 A7);
16    IF STRIP(A1) NE '' THEN OUTPUT;
17  RUN;
18
19  DATA SDTM_TABLE_METADATA_SHEET;
20    STUDYID = "&STUDYID" ;
21    SET SDTM_TABLE_METADATA_SHEET;
22  RUN;
23
24  /* GET SORTING KEYS, RESORT DATASET AND RECREATE --SEQ */
25  PROC SQL NOPRINT;
26    SELECT tranwrd(KEYS, ",", " ") into :keys from SDTM_TABLE_METADATA_SHEET where STUDYID = "&STUDYID" & DATASET = "&domainName";
27  QUIT;
28
29  DATA LKEYS;
30    SET SDTM_TABLE_METADATA_SHEET;
31    LKEYS=LENGTH(STRIP(KEYS));
32    KEEP DATASET KEYS LKEYS;
33    WHERE DATASET="&DOMAINNAME";
34  RUN;
35
36  PROC SQL NOPRINT;
37    SELECT LKEYS into :Lkeys from LKEYS;
38  QUIT;
39
40  %PUT NOTE: Keys are &KEYS.;
```



THANK YOU FOR YOUR ATTENTION
Q&A

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